You will **not** be given any of the trigonometric formulas and identities in Chapter 6 on the midterm or final exam. To ease the load, I will stay away from the half angle formulas in section 6.5. So you should know the following formulas:

Sum Formulas:

$$\cos(\alpha+\beta) = \cos\alpha\cos\beta - \sin\alpha\sin\beta$$
$$\sin(\alpha+\beta) = \sin\alpha\cos\beta + \cos\alpha\sin\beta$$
$$\tan(\alpha+\beta) = \frac{\tan\alpha+\tan\beta}{1-\tan\alpha\tan\beta}$$

Note that in a pinch you can calculate $\tan(\alpha+\beta)$ from $\sin(\alpha+\beta)$ and $\cos(\alpha+\beta)$. (Remember, $\tan(\alpha+\beta) = \frac{\sin(\alpha+\beta)}{\cos(\alpha+\beta)}$.) It would be best, however, to memorize the formula for tangent as well.

Just because I've only listed the sum formulas doesn't mean the difference formulas won't be on the test. You can compute those using the sum formulas. For example, $\cos(15°) = \cos(45° - 30°) = \cos(45° + (-30°)) = \cos 45° \cos(-30°) - \sin 45° \sin(-30°)$ etc.

Double Angle Formulas:

$$\sin(2\theta) = 2\sin\theta\cos\theta$$
$$\cos(2\theta) = \cos^2\theta - \sin^2\theta$$
$$\cos(2\theta) = 1 - 2\sin^2\theta$$
$$\cos(2\theta) = 2\cos^2\theta - 1$$

This looks like a lot to remember, but $\sin(2\theta)$ comes from using the sum formula for $\sin(\theta+\theta)$. Same with the first formula for $\cos(2\theta)$. The last two come from using $sin^2\theta + cos^2\theta = 1$ to subtitute things for $sin^2\theta$ or $cos^2\theta$. See your notes for details.

Test problems will use these identities, but they may look different. For example, that the angle may not be called θ. Also, remember this trick which was used in many homework problems. We know that $\sin(2\alpha) = 2\sin\alpha\cos\alpha$. Thus:

$\sin(4\theta) = 2\sin(2\theta)\cos(2\theta)$ (let $\alpha = 2\theta$)
$\sin(8\theta) = 2\sin(4\theta)\cos(4\theta)$ (let $\alpha = 4\theta$)

and so on. There are similar tricks with $\cos(4\theta)$, $\cos(6\theta)$, $\cos(8\theta)$, etc.

I also think these are fair game: $\sin^2\theta = \frac{1-cos(2\theta)}{2}$, $\cos^2\theta = \frac{1+cos(2\theta)}{2}$. You get these from rearranging the last two double angle formulas (solve for $\sin^2\theta$ or $\cos^2\theta$) so I don't really count them as separate.